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(71) Applicant(s)

Sagem SA

(Incorporated in France)

6 Avenue d'Iena, 75116 Paris, France

(72) Inventor(s)

Philippe Charbonnier

(74) Agent and/or Address for Service

Appleyard Lees

15 Clare Road, HALIFAX, West Yorkshire, HX1 2HY,
United Kingdom

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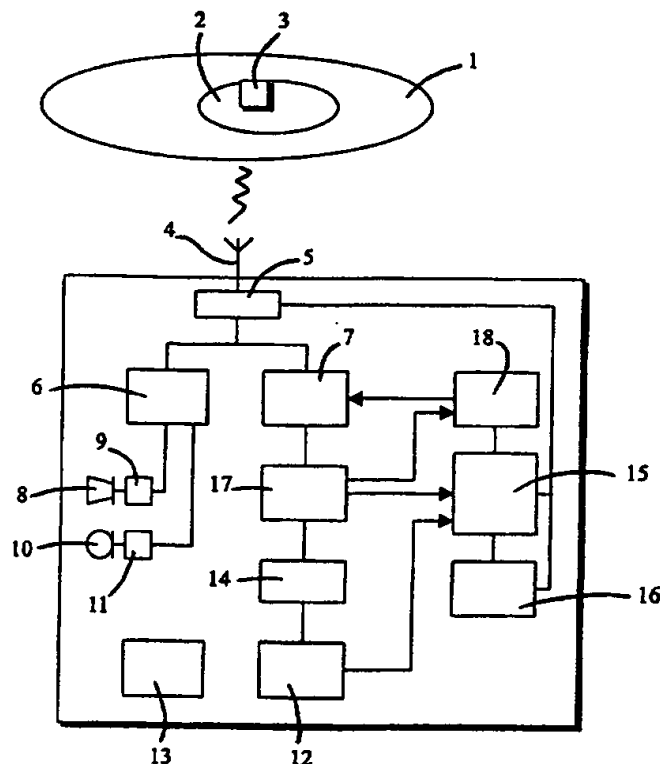
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(54) Abstract Title

Emergency call network for mobile telephone

(57) Process for calling, with the aid of a mobile telephone, an emergency centre (3) of an emergency call cellular telephone network (2), in which, the telephone camping onto a first cellular telephone network (1), it decamps from the first network (1) and camps onto the second emergency call network (2), via which it calls the emergency centre (3), automatically, either upon the dialling by the user of an emergency number, the telephone in this case inhibiting the telephone calling of the emergency number, or by pressing an emergency call button. The emergency number may be inhibited on the first network, or may be selected by pressing an emergency call button. If the emergency network cannot be found, the call may be completed via the first network.



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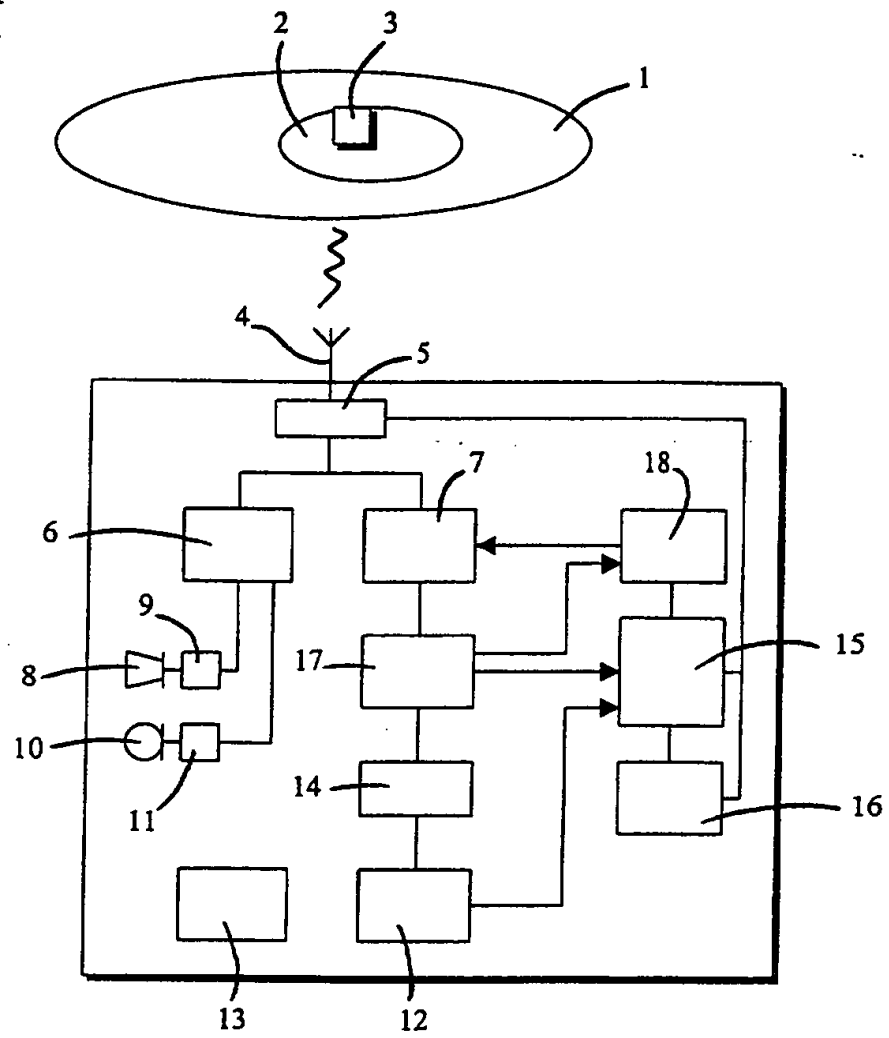


Figure unique

**EMERGENCY CALL PROCESS AND MOBILE TELEPHONE FOR
IMPLEMENTING THE PROCESS**

For safety reasons, it is envisaged that
5 certain motorways should be furnished with an emergency
call cellular telephone network, enabling the users of
the motorway to call an emergency centre, with the aid
of a mobile telephone, so as to signal a difficulty
(accident, slowdown, tailback) and possibly to request
10 assistance.

When a motorway user, carrying a mobile
telephone, travels along the motorway, his mobile
telephone is simultaneously located in the area of
coverage of the emergency call network and in that of a
15 public cellular telephone network. If the mobile
telephone selects the public cellular network, either
automatically, or when so ordered by the user, it camps
onto this network but regularly monitors the presence
of other radio networks, and especially that of the
20 emergency call network.

It is recalled here that a cellular network
comprises a plurality of topographical base station
cells. Each base station transmits beacon channels,
which transport in particular information relating to
25 the cellular network. By definition, a mobile telephone
"camps-on" to a cellular network, if it listens to the
beacon channel of a base station of this network and
regularly verifies the presence of this channel so as
to remain in contact with the base station.

30 To call the emergency centre, the user must, by
selecting from menus, interrogate his telephone so that
it indicates the available networks to him by display
on the screen, and then force the telephone to decamp
from the public network and to camp onto the emergency
35 call network, by selecting the emergency call network,
and finally to initiate the call to the emergency call
centre. In short, these manipulations are complex and
consequently difficult to execute in an emergency

situation, generally accompanied by a user state of panic.

The present invention proposes to alleviate this drawback.

5 To this end, the invention relates to a process for calling, with the aid of a mobile telephone, an emergency centre of an emergency call cellular telephone network, in which, the telephone camping onto a first cellular telephone network, it decamps from the
10 first network and camps onto the second emergency call network, via which it calls the emergency centre, under the control of a user, which process is characterized in that the telephone decamps from the first network in order to camp onto the second network, via which it
15 calls the emergency centre, automatically, upon a single action by the user, recognizable by the telephone.

In a particular embodiment, upon the dialling by the user of an emergency number, the telephone
20 inhibits the telephone calling of this number and decamps from the first network in order to camp onto the emergency call network, via which it calls the emergency centre.

The dialling of the emergency number inhibits
25 the normal operation of the telephone which, instead of sending the number via the first network, decamps from this first network and then camps onto the second network, via which it calls the emergency centre.

Advantageously, by pressing an emergency call
30 button, the telephone decamps from the first network in order to camp onto the emergency call network, via which it calls the emergency centre.

In another embodiment, in order to camp onto the emergency call network, the telephone searches for
35 the said network and, if the latter is not accessible, remains camped onto the first network, via which it calls an emergency telephone call number, automatically.

The invention also relates to a mobile telephone, for implementing the above process, comprising telephone call means, means for searching for surrounding cells of a cellular telephone network and for selecting one of them, means for camping onto the selected cell and man/machine interface means, characterized in that it comprises means for calling an emergency centre of an emergency call cellular telephone network, which are configured in order to initiate a search for cells, so as to camp onto a cell of the emergency call network and to call the emergency centre via the emergency call network, under the control of a single action, executed with the aid of the man/machine interface means and different from the switching-on of the telephone.

The invention will be better understood with the aid of the following description of the emergency call process and of the mobile telephone, according to various embodiments of the invention, with reference to the single appended figure which represents a functional block diagram of the mobile telephone, according to one of the embodiments.

In the particular example of the description, a motorway is covered by a public cellular telephone network, here GSM, 1, and an emergency call cellular telephone network 2. The emergency call network 2 comprises an emergency centre 3, intended to receive and process emergency calls, transmitted by motorway user mobile telephones.

The mobile, or cellular, telephone represented in the figure comprises a radio antenna 4, a coding/decoding block 5, a data transmission and reception block 6, a telephone call block 7 and a man/machine interface.

The man/machine interface comprises a loudspeaker 8, a microphone 10, an entry keypad 12 and a display screen 13. The loudspeaker 8 and the microphone 10 are linked to the transmission and reception block 6, with interposition of a

digital/analogue converter (DAC) 9 and of an analogue/digital converter (ADC) 11, respectively.

The coding/decoding block 5 is intended for transforming the radio signals received into data and
5 conversely for transforming the data to be transmitted into radio signals.

The telephone call block 7 is intended for transmitting telephone off-hook signalings, telephone on-hook signalings and telephone dialling signalings.

10 The transmission and reception block 6 and the call block 7 are linked to the coding/decoding block 5, itself linked to the radio antenna 4.

The entry keypad 12 comprises the ordinary elements of a telephone keypad, and in particular
15 telephone dialling buttons, a telephone off-hook button, a telephone on-hook button and an on/off button. To call a telephone call number, a user enters this number, with the aid of the dialling buttons, and presses the telephone off-hook button, so as to send
20 the number entered via the cellular telephone network, onto which the telephone camps. This telephone dialling operation, consisting in entering the number and in pressing the telephone off-hook button, constitutes a single action, that is to say a unitary operation,
25 carried out by the user with the aid of the keypad 12.

There is furthermore provided a memory 14, feeding the call block 7, and intended for temporarily storing a telephone call number, pending telephone dialling. The memory 14 is linked, on the one hand, to
30 the keypad 12 and, on the other hand, to the telephone call block 7, with interposition of a filter 17, explained hereinbelow.

The telephone also comprises a block 15 for searching for surrounding cells of a cellular telephone
35 network and for selecting one of them, and a block 16 for camping onto the selected cell. The blocks 15 and 16, connected together, are linked to the radio antenna 4, with interposition of the coding/decoding block 5.

A cellular network comprises a plurality of topographical base station cells. In GSM telephony, each base station transmits a BCCH (Broadcast Control Channel) beacon channel broadcasting various items of information relating to the network, and in particular the identity of the operator, the services available and the operating frequencies.

To search for and select a cell, the block 15 is intended for tagging the cellular telephone network cell BCCH beacon channels transmitted by surrounding base stations, and for selecting one of these channels. This search is initiated automatically upon switching on the telephone and, under the control of the camping block 16, when it no longer detects the beacon channel of the previously selected cell. The block 15 is intended for selecting, by default, a beacon channel of the public cellular network 1.

The public cellular network 1 is that onto which the telephone camps "by default", that is to say by preference. Thus, when the telephone is switched on, it camps by default onto the public network 1, failing any order to the contrary. The user can in effect, by selecting from menus of the man/machine interface, select another cellular network, from among the available cellular networks. One could also envisage the telephone camping onto a preselected network, other than the preferred or "default" network in the case where the "default" network is unavailable.

The camping block 16 is intended for camping onto the cell selected by the block 15, stated otherwise, for regularly monitoring the presence of the beacon channel of this cell so as to remain in contact with the corresponding base station. When the camping block 16 no longer detects the beacon channel of the cell onto which the telephone is camped, it indicates this to the block 15 so as to initiate a new search for cells. After having selected a new cell, the camping block 16 decamps from the previous cell and camps onto the new cell.

The filter 17, interposed between the call block 7 and the memory 14, is also linked to an emergency call block 18.

5 The emergency call block 18, linked to the search block 15 and to the telephone call block 7, is intended, under the control of the filter 17, for initiating firstly a search for surrounding cells and the selecting of a cell of the emergency call network 2, so as to decamp from the cellular network 1 and camp
10 onto the emergency call network 2, then for placing a call to the emergency centre 3 via the emergency call network 2, as will be explained hereinbelow.

The filter 17 is intended for comparing each number, dialled by a user with the aid of the telephone
15 keypad 12, with a prerecorded emergency number, in this instance the number "100". In the event of non-identity between the number dialled and the emergency number, the filter 17 is intended for retransmitting the dialled number to the telephone call block which then
20 initiates the calling of the dialled number. Conversely, in the event of identity, the filter 17 is intended for intercepting the number dialled, thereby inhibiting the telephone calling of this number, and, under the control of the filter 17, the block 18 is
25 intended for placing the call to the emergency centre 3, via the emergency call network 1, as described hereinafter. The filter 17 thus makes it possible to recognize the dialling of the emergency number, carried out by a user.

30 The telephone furthermore comprises a central control block, in this instance a microprocessor, not represented, to which all the elements described hereinabove are linked and which is intended for controlling the operation of the telephone.

35 After the structural and functional description of the telephone, the process for calling the emergency centre 3, corresponding to the operation of the telephone, will now be explained.

In order to switch the telephone on, the user presses the on/off button, thereby initiating the execution of a search for cells in order to select a cell of the public cellular network 1. The block 15 tags the beacon channels of the surrounding base stations, selects a cell of the cellular network 1 and orders the camping block 16 to camp onto the selected cell. The telephone then camps onto the public cellular network 1, changing cell if necessary.

10 To call the emergency centre 3, the user dials the emergency number "100". To do this, he enters the emergency number, with the aid of the dialling buttons of the keypad 12, and presses the telephone off-hook button. The number entered is temporarily stored in the
15 memory 14 then, after pressing the off-hook button, it is supplied to the filter 17.

The filter 17 compares the number entered with the prerecorded emergency number. The two numbers being identical, the filter 17 intercepts the number entered,
20 so that the telephone call block 7 does not receive it and therefore does not initiate the telephone call. Stated otherwise, the filter 17 inhibits the telephone calling of the emergency number dialled. Moreover, under the control of the filter 17, the emergency call
25 block 18 orders the automatic execution of the subsequent steps aimed at calling the emergency centre 3. By assumption, the telephone is here situated inside the area of coverage of the emergency call network 2.

Block 15 searches for the surrounding cells, by
30 tagging the beacon channels transmitted by the surrounding base stations, detects and selects a cell of the emergency call network 2 and orders the block 16 to camp onto the selected cell. The telephone then decamps from the public cellular network 1 and camps
35 onto the selected cell of the emergency call network 2. The telephone call block 7 then transmits a telephone off-hook signalling. Stated otherwise, the telephone goes off-hook and thus calls the emergency centre 3, via the emergency call network 2. After establishing

the communication between telephone and the emergency centre 3, via the emergency call network 3, the user of the telephone can talk to an operator of the emergency centre 3.

5 In the case where the telephone is outside the area of coverage of the emergency call network 2, when the user dials the emergency number, a message, displayed on the screen 13, signals to the user the impossibility of calling the emergency centre 3. The
10 same happens when, for any reason, the emergency call network 2 is unavailable, or more generally inaccessible.

 As a variant, in the case where the emergency call network 2 is not accessible, upon the dialling of
15 the emergency number, for example because the telephone is outside the area of coverage of the emergency call network, the telephone then remains camped onto the public cellular network 1, via which it calls, automatically, a prerecorded emergency telephone call
20 number different from the emergency number dialled, for example the number "112".

 In the foregoing description, when the telephone camps onto the emergency call network 2, it is sufficient for it to go off-hook in order to call
25 the emergency centre. As a variant, a telephone call number could be allocated to the emergency centre 3. In this case, to call the emergency centre 3, the telephone would, after having gone off-hook, have to send, automatically, the telephone call number of the
30 emergency centre 3, via the emergency call network 2.

 In a second embodiment of the invention, differing from the foregoing description only through what will now be described, the filter is intended for comparing each number dialled with a prerecorded
35 emergency telephone number for calling an emergency service of the public cellular network, in this instance the number "112".

 Should the user dial the emergency call number, the filter intercepts this number, at least

temporarily, and, under the control of the filter, the telephone searches for the surrounding cells in order to select a cell of the emergency call network.

5 If the telephone detects the presence of the emergency call network and if the latter is available, it automatically decamps from the public cellular network and camps onto the emergency call network, via which it calls the emergency centre, automatically, as explained previously.

10 If the emergency call network is not detected by the telephone, and more generally if it is inaccessible to the telephone, the filter automatically retransmits the emergency telephone call number "112", temporarily intercepted, to the telephone call block,
15 so as to initiate the "112" call via the public telephone call network.

To summarize, upon dialling the emergency telephone call number "112", if the emergency call network is accessible, the telephone inhibits the call,
20 decamps from the public cellular network and camps onto the emergency call network, via which it calls the emergency centre, and otherwise it remains camped onto the public cellular network via which it initiates the calling of the emergency call number "112" and thus
25 calls the associated "112" emergency service.

In a third embodiment, differing from the first embodiment described only through the elements which will now be described, the telephone does not include any filter, but an emergency call button intended for
30 controlling the emergency call block.

During operation, the telephone camps onto a cell of a cellular telephone network, for example of the "default" public cellular network. When the user presses the emergency call button, the telephone
35 recognizes that this is an action for launching a call to the emergency centre. It then initiates a search for cells, selects a cell of the emergency call network, decamps from the public cellular network and camps onto the emergency call network, via which it calls the

emergency centre, as explained previously, provided that it is in the area of coverage of the emergency call network and that the latter is available. In the case where the emergency call network is inaccessible
5 to the telephone, the latter displays a message indicating to the user that the emergency call network is not accessible. As a variant, the telephone could automatically call an emergency telephone call number, via the public cellular network, when the emergency
10 network is not accessible..

It will be stressed here that, under the control of a single action by the user, consisting in dialling a specific number (straightforward emergency number or emergency telephone call number) or in
15 pressing the emergency call button, which action is different from the switching-on of the telephone, the emergency call block is intended for initiating, stated otherwise for commanding the execution of a search for cells, so as to camp onto a cell of the emergency call
20 network and call the emergency centre via the emergency call network.

CLAIMS

1. Process for calling, with the aid of a mobile telephone, an emergency centre (3) of an emergency call cellular telephone network (2), in which, the telephone camping onto a first cellular telephone network (1), it decamps from the first network (1) and camps onto the second emergency call network (2), via which it calls the emergency centre (3), under the control of a user, which process is characterized in that the telephone decamps from the first network (1) in order to camp onto the second network (2), via which it calls the emergency centre (3), automatically, upon a single action by the user, recognizable by the telephone.
2. Process according to Claim 1, in which, upon the dialling by the user of an emergency number, the telephone inhibits the telephone calling of this number and decamps from the first network (1) in order to camp onto the emergency call network (2), via which it calls the emergency centre (3).
3. Process according to Claim 1, in which, by pressing an emergency call button, the telephone decamps from the first network in order to camp onto the emergency call network, via which it calls the emergency centre.
4. Process according to one of Claims 2 and 3, in which, in order to camp onto the emergency call network (2), the telephone searches for the said network (2) and, if the latter is not accessible, remains camped onto the first network (1), via which it calls an emergency telephone call number, automatically.
5. Process according to Claim 1, in which, upon the dialling by the user of an emergency telephone call number of the first network (1), the telephone searches for the emergency call network (2), if the latter is not accessible, it inhibits the telephone calling of the emergency call number, decamps from the first network (1) in order to camp onto the second network (2), via which it calls the emergency centre (3), and

otherwise it remains camped onto the first network (1) via which it calls the emergency call number.

6. Mobile telephone, for implementing the process according to Claim 1, comprising telephone call means (7), means (15) for searching for surrounding cells of a cellular telephone network and for selecting one of them, means (16) for camping onto the selected cell and man/machine interface means (8, 10, 12, 13), characterized in that it comprises means (17, 18) for calling an emergency centre (3) of an emergency call cellular telephone network (2), which are configured in order to initiate a search for cells, so as to camp onto a cell of the emergency call network (2) and to call the emergency centre (3) via the emergency call network (2), under the control of a single action, executed with the aid of the man/machine interface means (12) and different from the switching-on of the telephone.

7. Telephone according to Claim 6, in which the means for calling the emergency centre comprise filtering means (17) configured, should a number be dialled with the aid of the man/machine interface means, for comparing this number with a prerecorded emergency number and, in the event of identity, intercepting it, so as to inhibit the telephone call.

8. Telephone according to Claim 6, in which the man/machine interface means comprise an emergency call button intended for controlling the means for calling the emergency centre.



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Claims searched: 1-8

Examiner: Robert Shorthouse
Date of search: 3 July 2001

Patents Act 1977

Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4L (LRAB, LRAX, LRPMG, LRCMX, LEP)

Int Cl (Ed.7): H04Q 7/22, /38

Other: Online: WPI, EPODOC, JAPIO, INSPEC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	WO 00/54537 A2 (NOKIA) See page 2 line 28 - page 3 line 18	-
A	WO 98/48575 A2 (ERICSSON) See page 2 lines 19-26 and page 5 lines 1-9	-
A	FR 2728752 (AGP) See page 2 lines 1- 28	-

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Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.